

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
US Department of Commerce  
United States Patent and Trademark  
Office, PCT  
2011 South Clark Place Room  
CP2/5C24  
Arlington, VA 22202  
ETATS-UNIS D'AMERIQUE  
in its capacity as elected Office

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Date of mailing (day/month/year) 02 July 2001 (02.07.01)	
International application No. PCT/DK00/00561	Applicant's or agent's file reference 72663 Si/Ve
International filing date (day/month/year) 06 October 2000 (06.10.00)	Priority date (day/month/year) 06 October 1999 (06.10.99)
Applicant SKOV-HANSEN, Peder	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
02 May 2001 (02.05.01)

☐ in a notice effecting later election filed with the International Bureau on:  
\_\_\_\_\_

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<p>The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No.: (41-22) 740.14.35</p>	<p>Authorized officer F. Baechler</p> <p>Telephone No.: (41-22) 338.83.38</p>
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(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



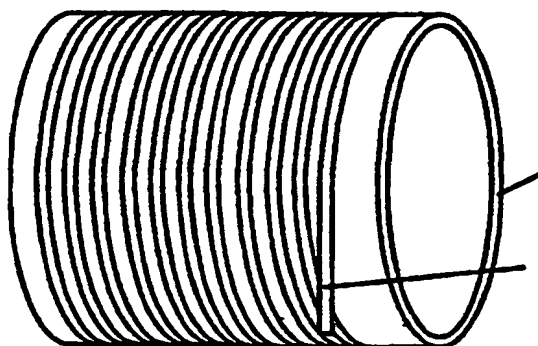
(43) International Publication Date  
12 April 2001 (12.04.2001)

PCT

(10) International Publication Number  
**WO 01/26120 A2**

- (51) International Patent Classification<sup>7</sup>: **H01F 6/00**
- (21) International Application Number: **PCT/DK00/00561**
- (22) International Filing Date: **6 October 2000 (06.10.2000)**
- (25) Filing Language: **English**
- (26) Publication Language: **English**
- (30) Priority Data:  
**PA 1999 01432 6 October 1999 (06.10.1999) DK**
- (71) Applicant (for all designated States except US): **NORDIC SUPERCONDUCTOR TECHNOLOGIES A/S [DK/DK]; Priorparken 685, DK-2605 Brøndby (DK).**
- (72) Inventor; and
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- (74) Agent: **CHAS. HUDE A/S; H.C. Andersens Boulevard 33, DK-1780 Copenhagen V (DK).**
- (81) Designated States (*national*): **AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.**
- (84) Designated States (*regional*): **ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).**
- Published:**  
— *Without international search report and to be republished upon receipt of that report.*
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: **A METHOD OF MANUFACTURING AND USING A SUPERCONDUCTOR TAPE, ESPECIALLY WHEN SAID TAPE IS TO BE WOUND ON A COIL**



(57) Abstract: A method for the use of a superconducting tape, especially for the winding of a superconducting tape to a coil. According to the invention, the superconducting tape is wound with a radius of curvature adapted to a specific application before it is subjected to a sintering in an oven, whereafter the sintering is carried out. Thus the sintering can be carried out before a winding to a mandrel is carried out. As a result it is possible to manufacture even small coils without the use of special mandrels and insulating layers which can tolerate high temperatures.

**WO 01/26120 A2**

Title: A method of manufacturing and using a superconducting tape, especially when said tape is to be wound on a coil.

Technical Field.

The invention relates to a method of manufacturing and using a superconducting  
5 tape, especially when said tape is to be wound into a coil.

Background Art

US-PS No. 5,531,015 discloses two principles for the winding procedure.

1. Wind and react or

2. React and wind.

10 The first method involves winding a superconducting tape to a mandrel with or without intermediate insulating layers followed by a sintering in an oven. This method presents high requirements to the mandrel and to the properties of the insulating layers with respect to absorption of heat, and it is suited for the manufacture of coils with a small radius.

15 The second method involves a winding up of the tape with a relatively large radius followed by the tape wound up being sintered in an oven. Not until now the tape is wound onto a mandrel. However, during the winding procedure a risk applies of the superconducting material of the tape brittling due to the small bending radius. The latter applies especially to the manufacture of small coils where the tape is subjected  
20 to particularly extensive deformations during the winding procedure.

Brief Description of the Invention.

The object of the invention is to provide a method of manufacturing superconducting tapes with small radii of curvature, especially small coils not encumbered with the above draw-backs.

A method of the above type is according to the invention characterised in that prior  
5 to the sintering in an oven, the superconducting tape is wound up with a radius of curvature dimensioned in such a way that the curvature is adapted to a specific application, whereafter the sintering is carried out.

As a result the sintering can be carried out before the tape is wound on a mandrel. In this manner it is possible to manufacture even small coils without the use of  
10 special mandrels and insulating layers which can tolerate high temperatures.

Moreover, the superconducting tape may according to the invention be wound up or bent into one or more radii of curvature prior to the sintering, said radii of curvature being dimensioned in such a way that within a predetermined radius of curvature range said radius of curvature is adapted to a specific application, whereby the said  
15 radius of curvature range corresponds to the range defining the handling and winding extent of the tape without involving a brittling of the superconducting material.

Furthermore, the said radius of curvature range may according to the invention include a radius of curvature being smaller than the final radius of curvature as well as a radius of curvature exceeding said final radius of curvature.

20 Prior to the sintering, the superconducting tape may according to the invention be provided with one or more bending radii, whereby said tape does not brittle when it is placed in the application in question after the sintering.

#### Brief Description of the Drawings

The invention is explained in greater detail below with reference to the accompanying drawings, in which

Fig. 1 illustrates a superconducting tape wound into a so-called "pancake shape" for the sintering,

5

Fig. 2 illustrates the sintered tape wound on a coil holder, and

Fig. 3 shows the maximum strain in a superconducting tape versus an amendment of the radius of curvature for two different values of the initial radius of curvature.

#### Best Mode for Carrying Out the Invention

- 10 The known "React and Wind" method involves a winding of the tape so as to allow the tape to be placed in an oven for an annealing of the superconducting material. It is, of course, not possible to place several km of tape in an oven without said tape being wound up. Such a wound up tape is ordinarily called a "pancake-shaped" superconducting tape. Such pancake-shaped tapes are for instance described in EP
- 15 0631331 in the name of Sumitomo Electric Industries. Such a wound up tape is encumbered with the draw-back that microcracks can arise in the superconducting material in case said material is bent too much or if said material is subjected to a too extensive deformation. The inventors have tried to map these circumstances, and Fig. 3 illustrates the strain versus the radius of curvature of two different initial radii of
- 20 curvature. It appears that it is much easier to increase the radius of curvature without involving a too extensive strain than to reduce said radius of curvature. When a strain of for instance 0.40%, viz. a critical strain, is acceptable, the possible range of radius of curvature without exceeding the superconducting properties can be deduced from the graph with the initial radius of curvature in question. Sometimes a critical
- 25 strain of up to 1 % is acceptable, cf. US-PS No. 5,531,015.

According to the present invention the superconducting tape is provided with a radius of curvature, viz. is subjected to a deformation, prior to the annealing, and within the range appearing from Fig. 3 this radius of curvature is close to the final radius of curvature, viz. the resulting deformation. The radius of curvature can be slightly smaller or slightly larger than the final radius of curvature. In this manner it is possible to avoid a deformation of the tape to such an extent that microcracks arise during the following placing of said superconducting tape on for instance a mandrel, viz. a coil holder, with intermediate layers of insulating material, i.e. without being subjected to a strain beyond the range of the radius of curvature. In addition, the advantage is obtained that it is possible to use a mandrel and intermediate insulating material not tolerating the high sintering temperatures of typically 900°C. In other words a free choice applies with respect to the material used for the mandrel and the insulating layers, which in practice turned out to be a vital factor.

However, during the manufacturing process it is important that a predetermined operating margin applies to the radius of curvature of the superconducting tape, and it is thanks to the inventor that these margins have now been mapped and quantified, cf. Fig. 3.

It appears furthermore from the curve of Fig. 3 that the initial radius of curvature should rather be too small than too large because it is much easier to carry out a strain than to carry out a further bending. However, with respect to the handling it is an advantage that it is possible to subject the tape to a strain.

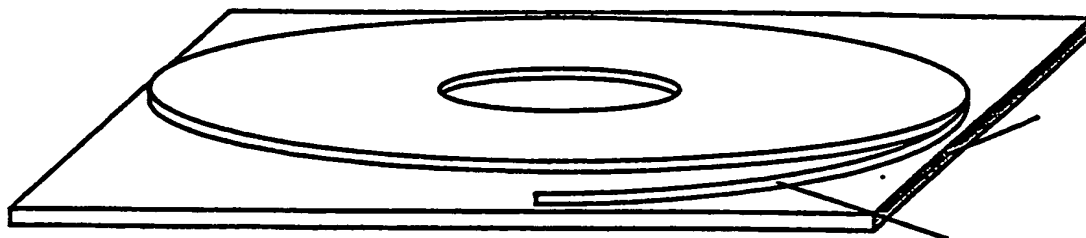
In general, the superconducting tape can be wound with a radius of curvature implying that the tape brittles when it is subjected to a strain after the sintering, and according to a particular embodiment the superconducting tape is provided with one or several bending radii, whereby it does not brittle when it is placed in the application after said sintering.

The tape is preferably a multi-filament tape because such tapes are more tolerant to bending than the mono-filament tapes.

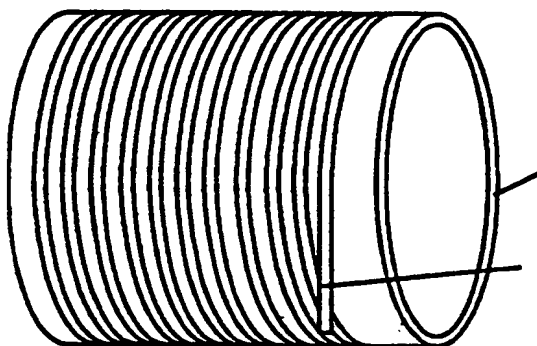
Claims

1. A method for the use of a superconducting tape, c h a r a c t e r i s e d in that prior to the sintering in an oven, the superconducting tape is wound with a radius of curvature dimensioned in such a way that the curvature is adapted to a specific appli-  
5 cation, whereafter the sintering is carried out.
2. A method as claimed in claim 1, c h a r a c t e r i s e d in that the said radius of curvature range includes a radius of curvature being smaller than the final radius of curvature, as well as a radius of curvature exceeding said final radius of curvature.
3. A method as claimed in one of the preceding claims, c h a r a c t e r i s e d in that  
10 prior to the sintering, the superconducting tape is wound with a radius where the tape brittles if it is subjected to a strain after the sintering.
4. A method as claimed in one of the preceding claims, c h a r a c t e r i s e d in that after the sintering the superconducting tape is wound on a holder, preferably a coil holder without being subjected to a strain beyond the range of the above radius of  
15 curvature.
5. A method as claimed in one of the preceding claims, c h a r a c t e r i s e d in that prior to the sintering, the superconducting tape is provided with one or several bend-  
ing radii, whereby it does not brittle when it is placed in the application in question after the sintering.

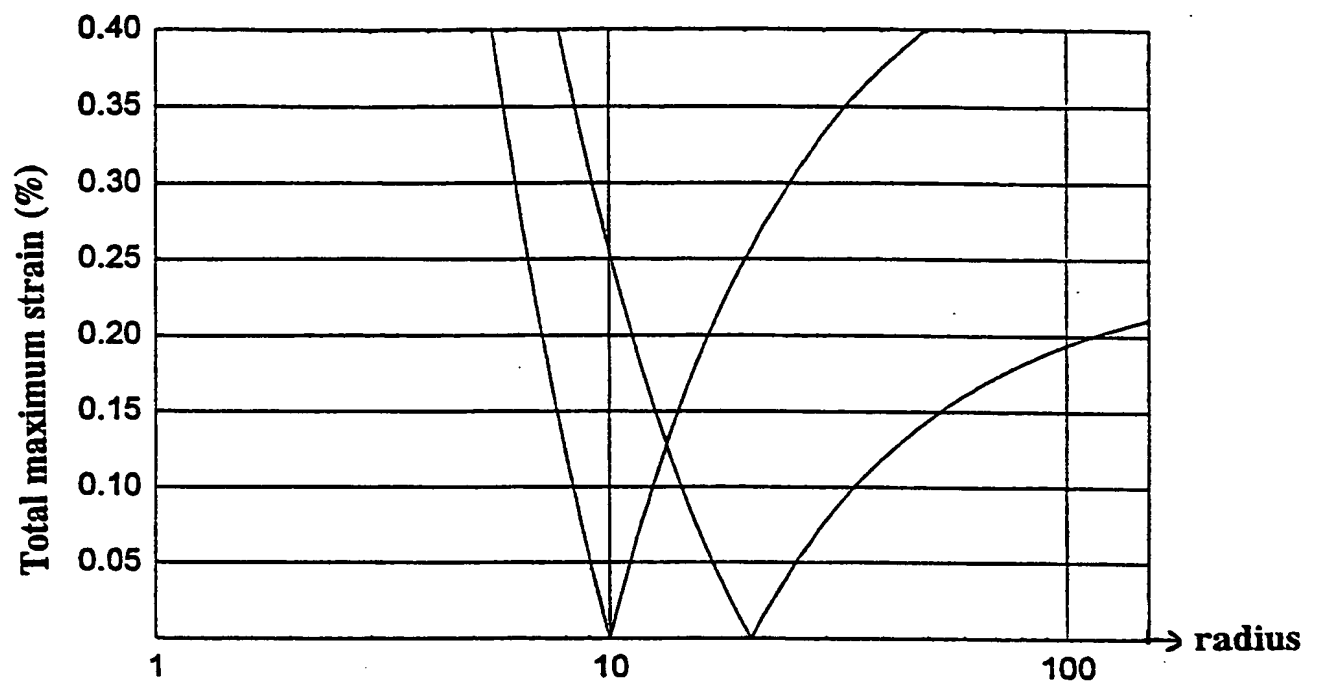




*Fig 1*  
*(prior art)*



*Fig 2*

*Fig 3*

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(21) International Application Number: PCT/DK00/00561

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(30) Priority Data:  
PA 1999 01432 6 October 1999 (06.10.1999) DK

(71) Applicant (for all designated States except US): **NORDIC SUPERCONDUCTOR TECHNOLOGIES A/S** [DK/DK]; Priorparken 685, DK-2605 Brøndby (DK).

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(75) Inventor/Applicant (for US only): **SKOV-HANSEN, Peder** [DK/DK]; Nattergalevej 44. 2. th., DK-2400 Copenhagen NV (DK).

(74) Agent: **CHAS. HUDE A/S**; H.C. Andersens Boulevard 33, DK-1780 Copenhagen V (DK).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AT (utility model), AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

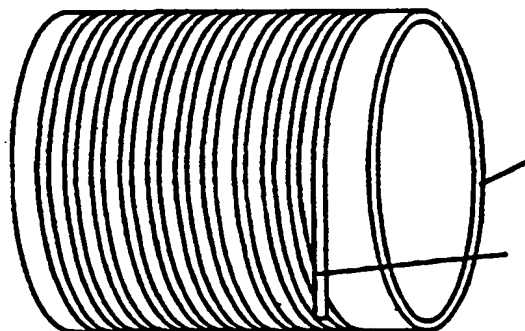
**Published:**

— with international search report

(88) Date of publication of the international search report:  
29 November 2001

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A METHOD OF MANUFACTURING AND USING A SUPERCONDUCTING TAPE.



(57) Abstract: A method for the use of a superconducting tape, especially for the winding of a superconducting tape to a coil. According to the invention, the superconducting tape is wound with a radius of curvature adapted to a specific application before it is subjected to a sintering in an oven, whereafter the sintering is carried out. Thus the sintering can be carried out before a winding to a mandrel is carried out. As a result it is possible to manufacture even small coils without the use of special mandrels and insulating layers which can tolerate high temperatures.

WO 01/26120 A3

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/DK 00/00561

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01F6/06

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01F H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 270 264 A (WEISSE HANS-JOERG) 2 June 1981 (1981-06-02) column 3, line 59 -column 5, line 12; figures 1-3	1-5
X	US 5 332 988 A (ZHUKOVSKY ALEXANDER ET AL) 26 July 1994 (1994-07-26) column 2, line 62 -column 3, line 4 column 4, line 4-26; figures 2,3	1-5

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

19 December 2000

Date of mailing of the international search report

11.04.01

Name and mailing address of the ISA

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NL - 2280 HV Rijswijk  
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Authorized officer

Magnus Westöö

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

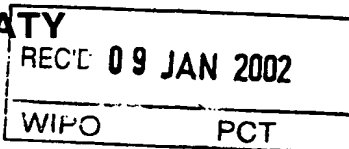
PCT/DK 00/00561

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4270264 A	02-06-1981	DE 2840526 A EP 0009181 A	27-03-1980 02-04-1980
US 5332988 A	26-07-1994	DE 4316499 A GB 2267760 A,B HK 1007624 A	18-11-1993 15-12-1993 16-04-1999

## AMENDED CLAIMS

[received by the International Bureau on 25 May 2001 (22.05.01);  
original claims 1-5 replaced by amended claims 1-4 (1 page)]

1. A method for the use of a superconducting tape, c h a r a c t e r i s e d in that prior to the sintering in an oven, the superconducting tape is wound with a radius of curvature dimensioned in such a way that the curvature is adapted to a specific appli-  
5 cation, whereafter the sintering is carried out, said radius of curvature range includes a radius of curvature being smaller than the final radius of curvature, as well as a radius of curvature exceeding said final radius of curvature.
2. A method as claimed in claim 1, c h a r a c t e r i s e d in that prior to the sintering, the superconducting tape is wound with a radius where the tape brittles if  
10 it is subjected to a strain after the sintering.
3. A method as claimed in one of the preceding claims, c h a r a c t e r i s e d in that after the sintering the superconducting tape is wound on a holder, preferably a coil holder without being subjected to a strain beyond the range of the above radius of curvature.
- 15 4. A method as claimed in one of the preceding claims, c h a r a c t e r i s e d in that prior to the sintering, the superconducting tape is provided with one or several bending radii, whereby it does not brittle when it is placed in the application in question after the sintering.



## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 72663 Si/Ve	<b>FOR FURTHER ACTION</b>		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/DK00/00561	International filing date (day/month/year) 06/10/2000	Priority date (day/month/year) 06/10/1999	
International Patent Classification (IPC) or national classification and IPC H01F6/00			
Applicant NORDIC SUPERCONDUCTOR TECHNOLOGIES A/S			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of two sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand  02/05/2001	Date of completion of this report  07.01.2002
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Korb, W  Telephone No. +49 89 2399 2284  

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/DK00/00561

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

### Description, pages:

1-5 as originally filed

### Claims, No.:

1-6 as received on 03/12/2001 with letter of 30/11/2001

### Drawings, sheets:

1/2,2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/DK00/00561

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes:	Claims 1 - 6
	No:	Claims
Inventive step (IS)	Yes:	Claims
	No:	Claims 1 - 6
Industrial applicability (IA)	Yes:	Claims 1 - 6
	No:	Claims

2. Citations and explanations  
**see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
**see separate sheet**

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: US-A-4 270 264 (WEISSE HANS-JOERG) 2 June 1981 (1981-06-02)

D2: US-A-5 332 988 (ZHUKOVSKY ALEXANDER ET AL) 26 July 1994 (1994-07-26)

2. Each of documents D1 and D2 discloses (see D1 column 3, line 59 - column 5, line 12; D2, column 2, line 62 - column 3, line 4, column 4, line 4 - 26, figures 2, 3) steps i. to iii. of a method as claimed in claim 1 besides of winding the tape in step i. with a curvature including a radius of curvature smaller than the final radius of curvature.

However on this difference no inventive step can be based. The problem to be solved by the present application is to avoid deformation of the tape to such an extent that microcracks arise during the following placing of the superconducting tape on a support like a mandrel or coil holder. For a skilled man it is obvious that this requires only a small amount of deformation to take place for any adaptation to a final radius of curvature. Furthermore a small amount of deformation implies (see also the statements in the present application at page 2, lines 17 - 19 and page 4, lines 4 - 9) that the radius of curvature can merely slightly be smaller or larger. Thus the skilled man had two obvious possibilities which he would have tried out for carrying out the desired adaptations to a final radius of curvature. One of these obvious possibilities is a radius of curvature smaller than the final radius of curvature. In consequence the subject-matter claimed in claim 1 lacks an inventive step, contrary to the requirements of Article 33(3) PCT.

3. Dependent claims 2 - 6 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, the reasons being as follows:

The additional features can be derived from documents D1 and D2 or represent

general knowledge.

**Re Item VII**

**Certain defects in the international application**

1. The documents D1 and D2 have not been identified in the description nor has the relevant background art disclosed therein been discussed. The requirements of Rule 5.1(a)(ii) PCT are, thus, not fulfilled.
2. The description should be in conformity with the claims in order to fulfil the requirements of Rule 5.1 (a)(ii)(iii) PCT.
3. It is considered appropriate to draft a single independent claim in the two-part form as required by Rule 6.3(b) PCT, whereby the features already known from the nearest state of the art should be placed in the preamble.

**Re Item VIII**

**Certain observations on the international application**

Claim 1 does not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The claim attempts to define the subject-matter in terms of the result to be achieved ("with a radius of curvature dimensioned in such a way that the curvature is adapted to a specific application") which merely amounts to a statement of the underlying problem. The technical features necessary for achieving this result should be added.

Claims

1. A method for the use of a superconducting tape, c h a r a c t e r i s e d in that prior to the sintering in an oven, the superconducting tape is wound with a radius of curvature dimensioned in such a way that the curvature is adapted to a specific appli-  
5 cation, whereafter the sintering is carried out.
2. A method as claimed in claim 1, c h a r a c t e r i s e d in that the said radius of curvature range includes a radius of curvature being smaller than the final radius of curvature, as well as a radius of curvature exceeding said final radius of curvature.
3. A method as claimed in one of the preceding claims, c h a r a c t e r i s e d in that  
10 prior to the sintering, the superconducting tape is wound with a radius where the tape brittles if it is subjected to a strain after the sintering.
4. A method as claimed in one of the preceding claims, c h a r a c t e r i s e d in that after the sintering the superconducting tape is wound on a holder, preferably a coil holder without being subjected to a strain beyond the range of the above radius of  
15 curvature.
5. A method as claimed in one of the preceding claims, c h a r a c t e r i s e d in that prior to the sintering, the superconducting tape is provided with one or several bending radii, whereby it does not brittle when it is placed in the application in question after the sintering.

Replaced by  
Article 34

Claims

1. A method for the production of a wound superconducting tape with a final radius of curvature comprising the steps of:
- 5     i. Winding the superconducting tape with a radius of curvature dimensioned in such a way that the curvature is adapted to a specific application having said final radius of curvature;
- ii. sintering said superconducting tape in an oven; and
- iii. providing said wounded tape with its final radius of curvature,
- 10    wherein said radius of curvature wound in said step of winding the superconducting tape includes a radius of curvature being smaller than the final radius of curvature.
2. A method according to claim 1, characterised in that the superconducting tape is wounded in a radius of curvature range including a radius of curvature being smaller than the final radius of curvature as well as a radius of curvature exceeding said
- 15    final radius of curvature.
3. A method according to any of the claims 1 and 2, characterised in that the tape is wound with a radius where the tape brittles if it is subjected to a strain after the sintering.
4. A method according to any one of the claims 1 to 3, characterised in that
- 20    after the sintering, the superconducting tape is wound on a holder without being subjected to a stain beyond the range resulting in a critical strain of 1%, preferably 0.40%.
5. A method according to claim 4, characterised in that said holder being a coil holder.

6. A method according to any one of the claims 1 to 5, characterised in that prior to the sintering, the superconducting tape is provided with one or several bending radii, whereby the tape does not brittle when it after sintering is provided with its final radius of curvature.